FIG. 1

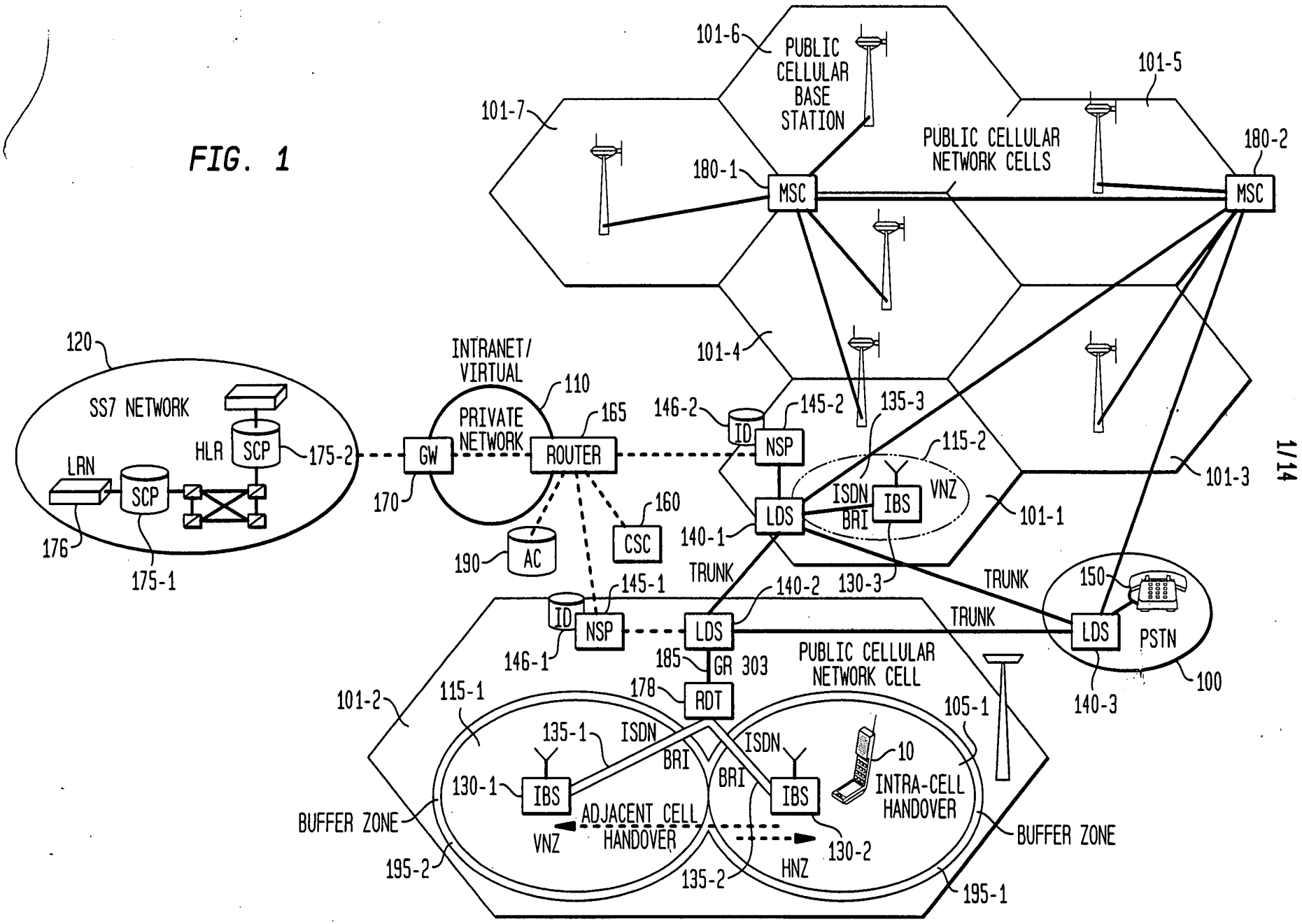

101-6
PUBLIC CELLULAR BASE STATION
101-5
101-7
PUBLIC CELLULAR NETWORK CELLS
180-2
180-1
MSC
MSC
120
INTRANET/ VIRTUAL PRIVATE NETWORK
110
101-4
SS7 NETWORK
165
146-2
145-2
135-3
ID
NSP
HLR
SCP
175-2
GW
ROUTER
115-2
LRN
SCP
ISDN BRI
IBS
VNZ
101-3
101-1
170
160
LDS
140-1
176
190
AC
CSC
175-1
TRUNK
145-1
140-2
130-3
TRUNK
150
ID
NSP
LDS
TRUNK
LDS
PSTN
146-1
185
GR 303
PUBLIC CELLULAR NETWORK CELL
100
140-3
178
RDT
101-2
115-1
105-1
135-1
ISDN
ISDN
10
BRI
BRI
130-1
IBS
IBS
INTRA-CELL HANDOVER
BUFFER ZONE
ADJACENT CELL HANDOVER
BUFFER ZONE
VNZ
130-2
195-2
135-2
HNZ
195-1

FIG. 2

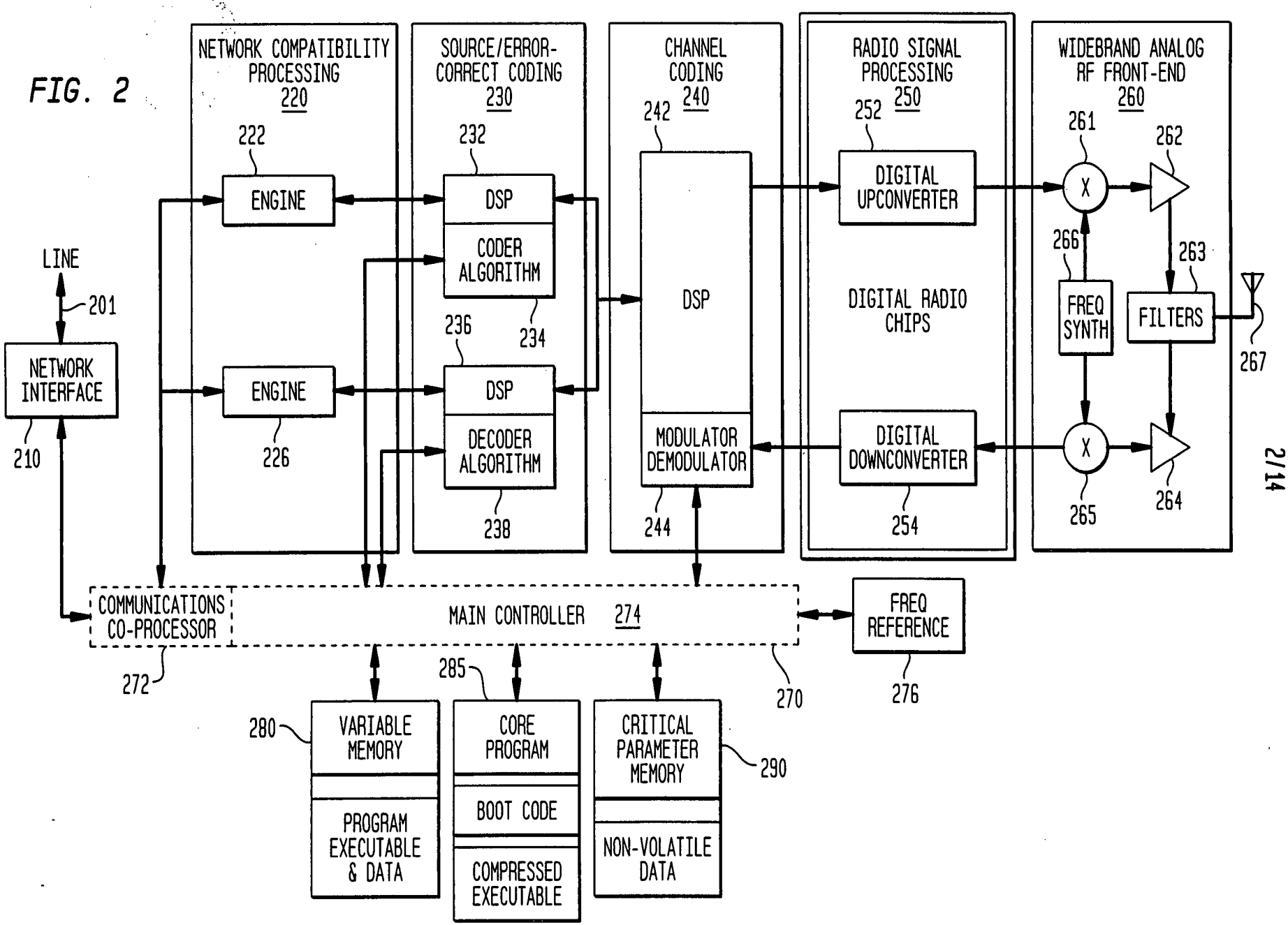
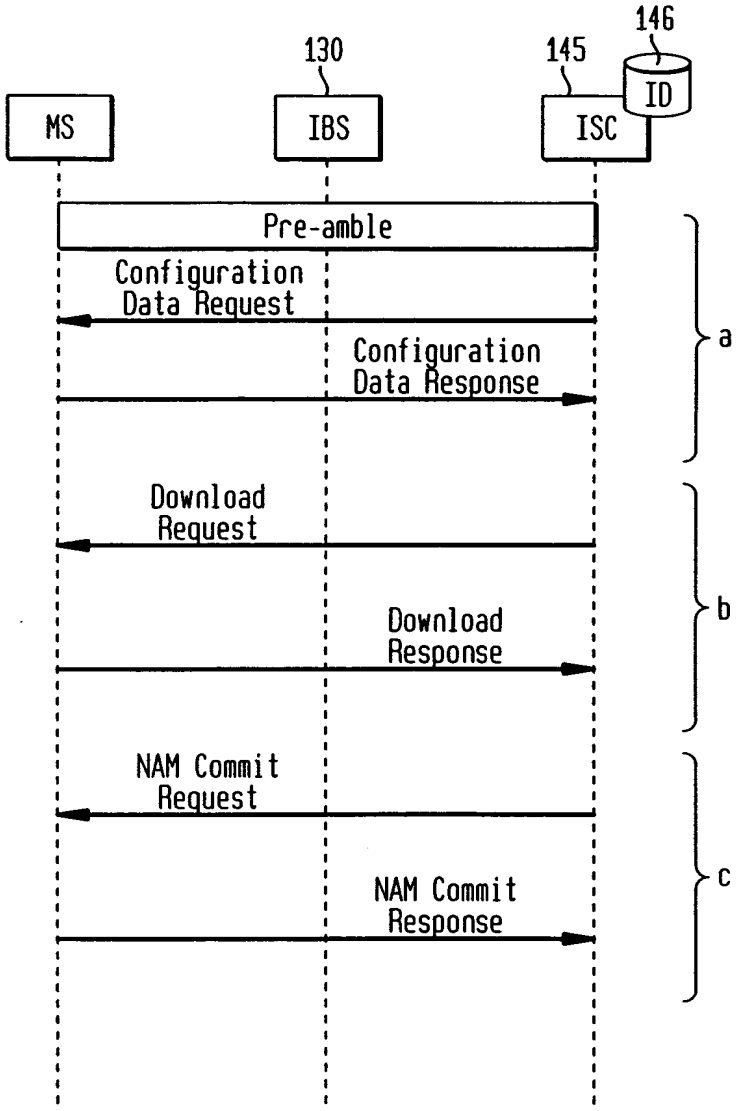

NETWORK COMPATIBILITY PROCESSING 220
SOURCE/ERROR-CORRECT CODING 230
CHANNEL CODING 240
RADIO SIGNAL PROCESSING 250
WIDEBRAND ANALOG RF FRONT-END 260
222
ENGINE
232
DSP
CODER ALGORITHM
234
236
DSP
DECODER ALGORITHM
238
ENGINE
226
242
DSP
MODULATOR DEMODULATOR
244
252
DIGITAL UPCONVERTER
DIGITAL RADIO CHIPS
DIGITAL DOWNCONVERTER
254
261
262
263
264
265
266
267
X
X
FREQ SYNTH
FILTERS
LINE
201
NETWORK INTERFACE
210
COMMUNICATIONS CO-PROCESSOR
272
MAIN CONTROLLER 274
270
FREQ REFERENCE
276
285
280
VARIABLE MEMORY
PROGRAM EXECUTABLE & DATA
CORE PROGRAM
BOOT CODE
COMPRESSED EXECUTABLE
CRITICAL PARAMETER MEMORY
NON-VOLATILE DATA
290

FIG. 3



20020420-DRAFT

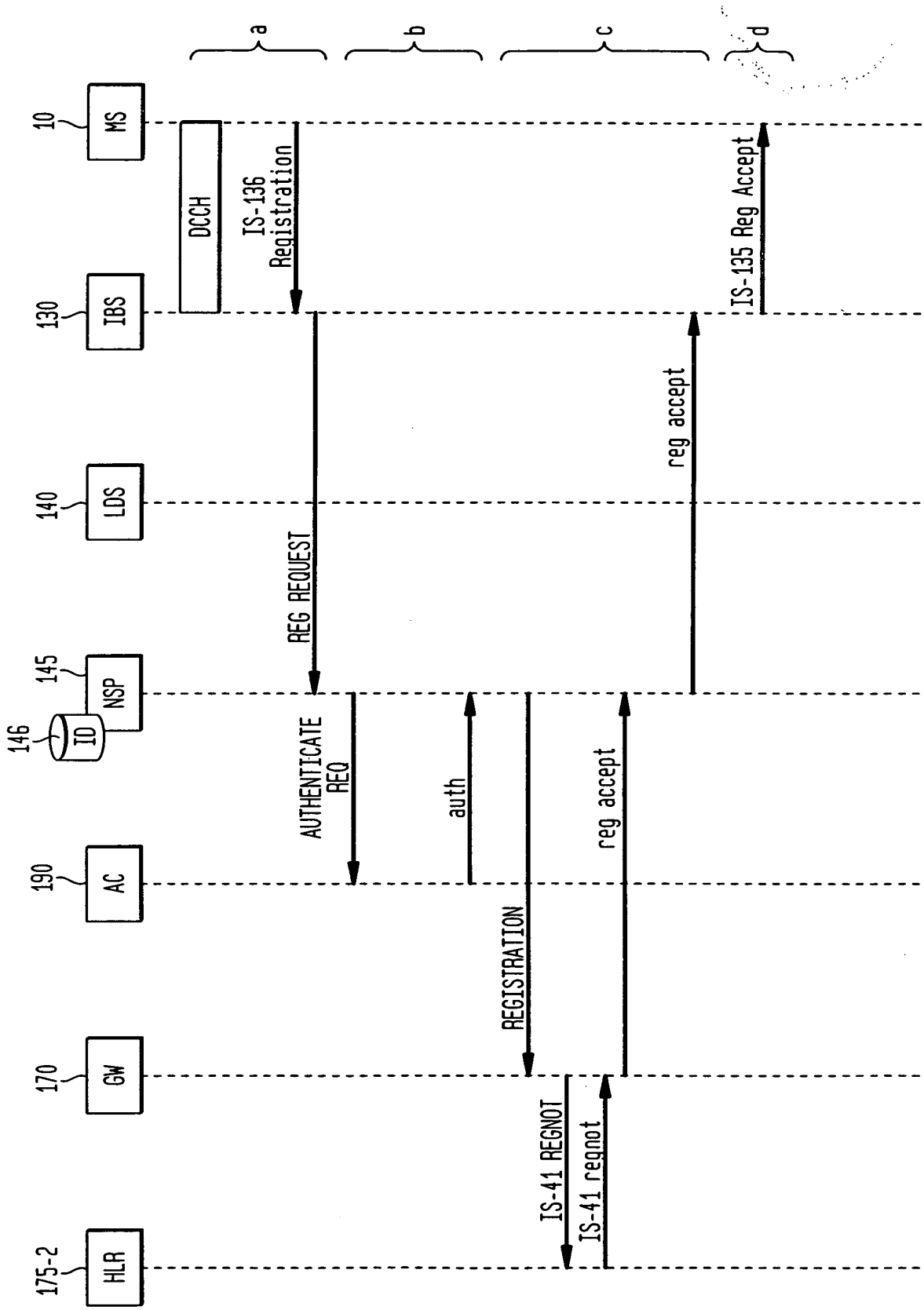

a
b
c
d
10
MS
130
IBS
140
LDS
145
NSP
146
ID
190
AC
170
GW
175-2
HLR
DCCH
IS-136 Registration
REG REQUEST
AUTHENTICATE REQ
auth
REGISTRATION
IS-41 REGNOT
IS-41 regnot
reg accept
reg accept
IS-135 Reg Accept

FIG. 4A

FIG. 4B

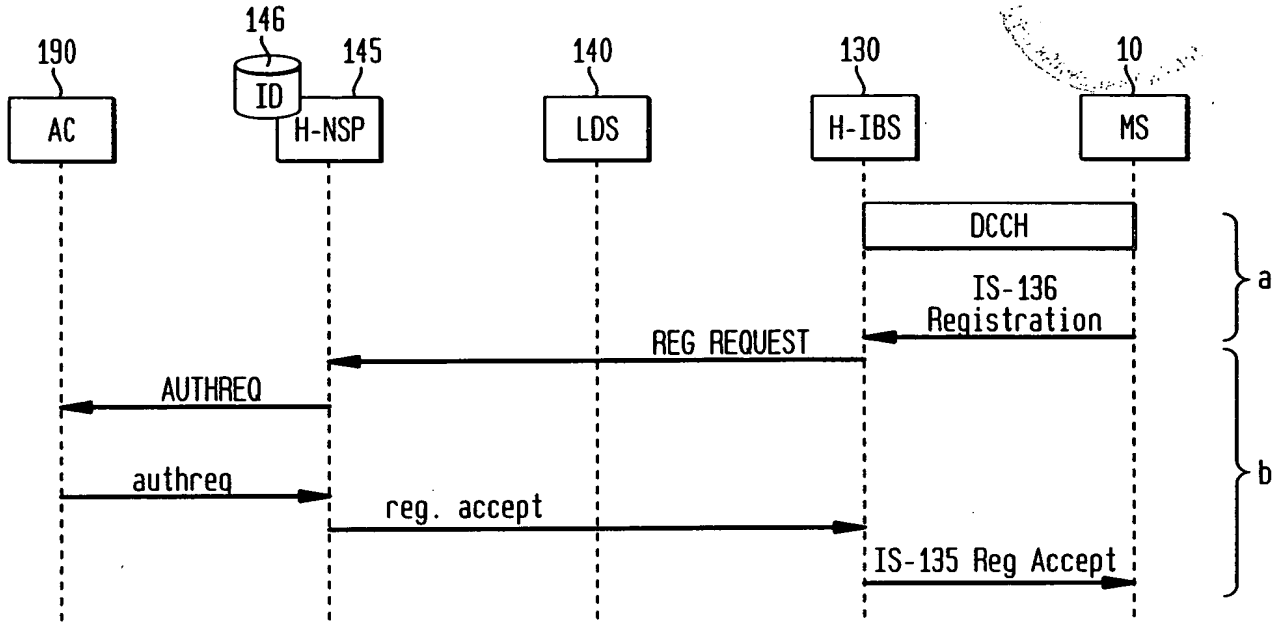
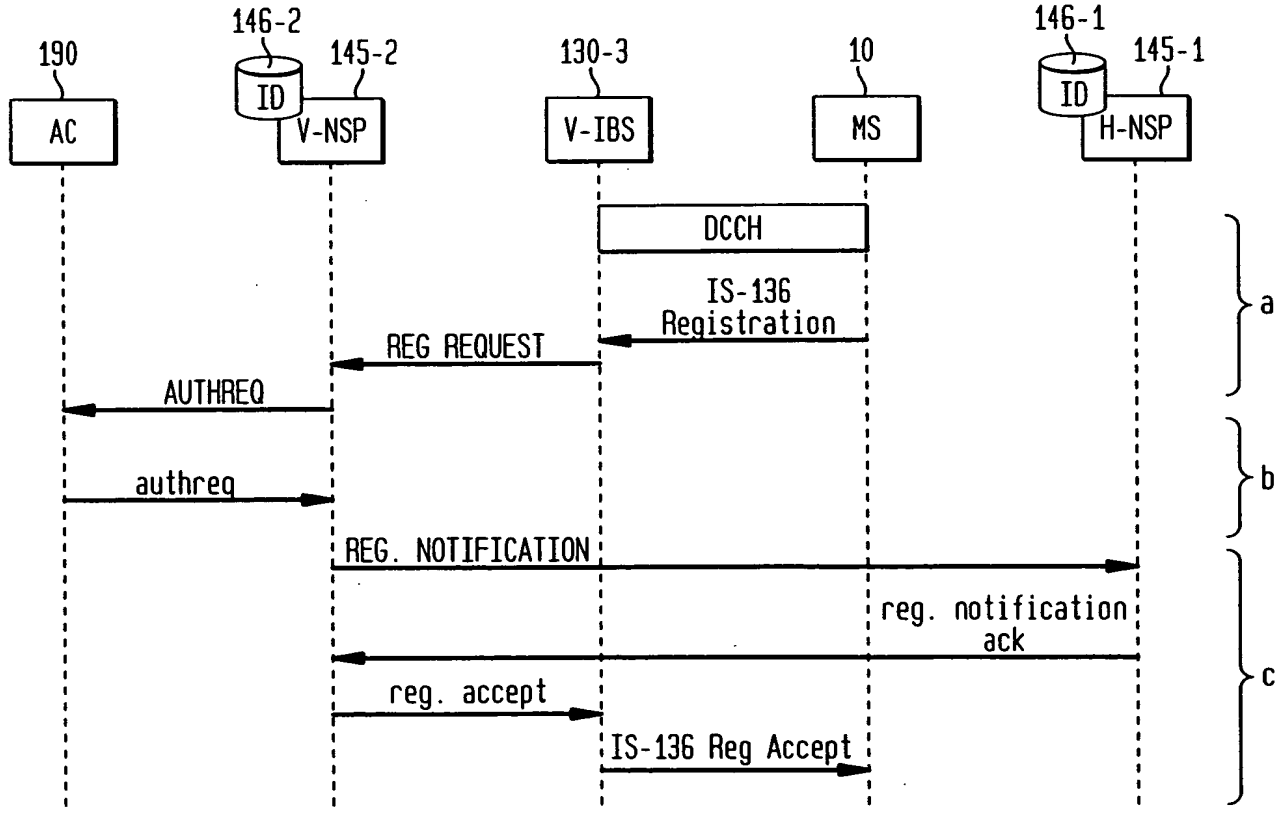

190
AC
146
ID
145
H-NSP
140
LDS
130
H-IBS
10
MS
DCCH
IS-136
Registration
REG REQUEST
AUTHREQ
authreq
reg. accept
IS-135 Reg Accept
a
b

FIG. 4C


190
AC
146-2
ID
145-2
V-NSP
130-3
V-IBS
10
MS
146-1
ID
145-1
H-NSP
DCCH
IS-136
Registration
REG REQUEST
AUTHREQ
authreq
REG. NOTIFICATION
reg. notification
ack
reg. accept
IS-136 Reg Accept
a
b
c

WO 96/39660 PCT/US96/08660

FIG. 5A

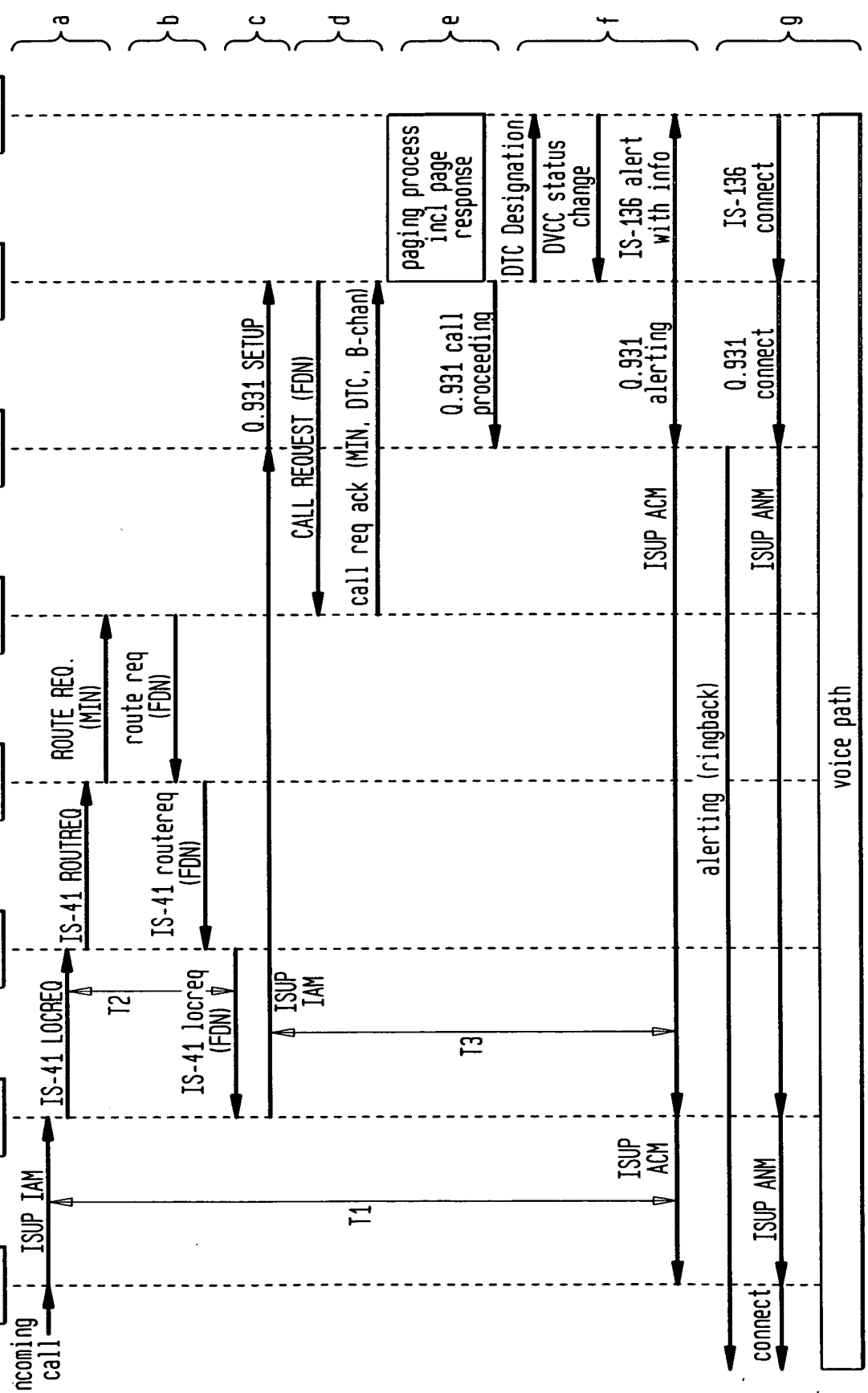


FIG. 5B

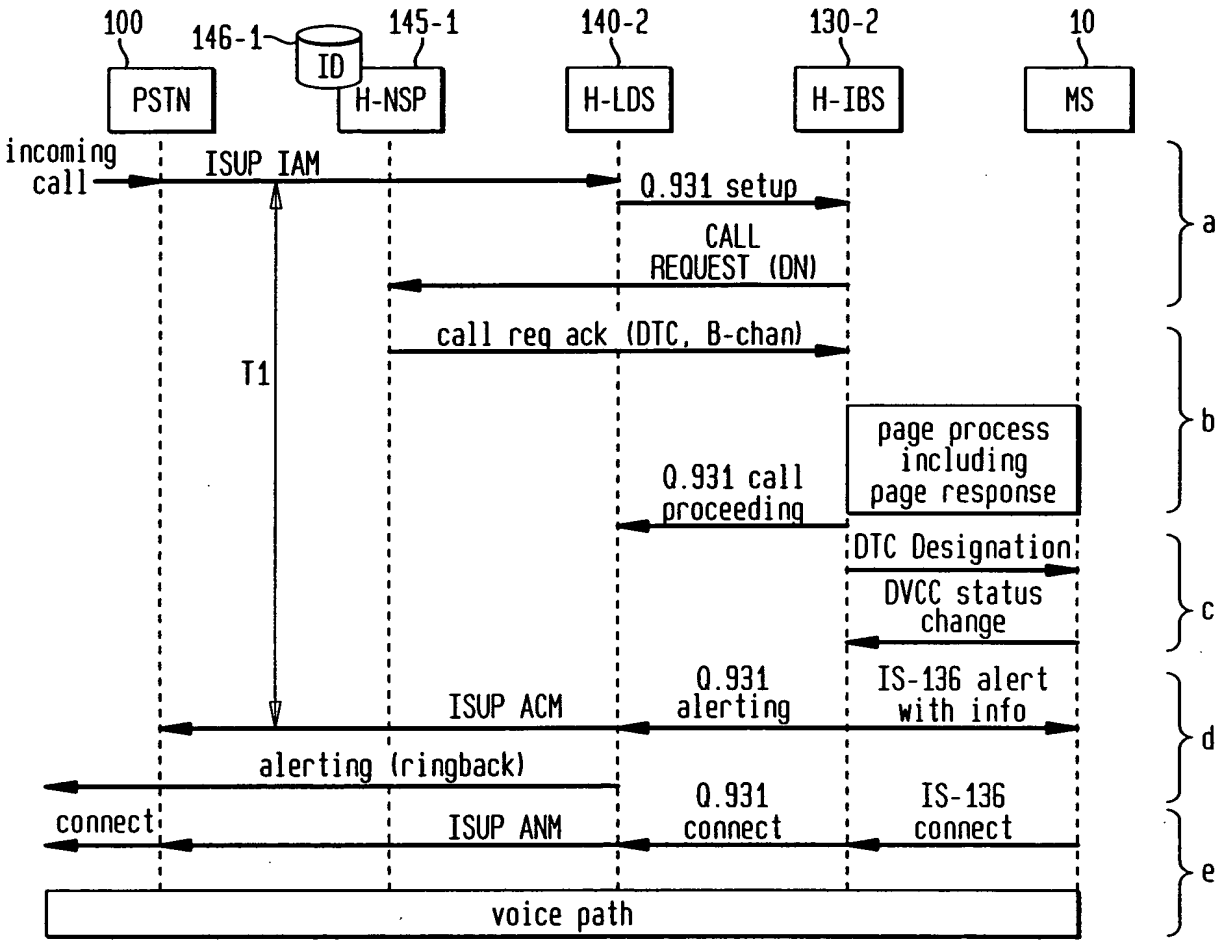
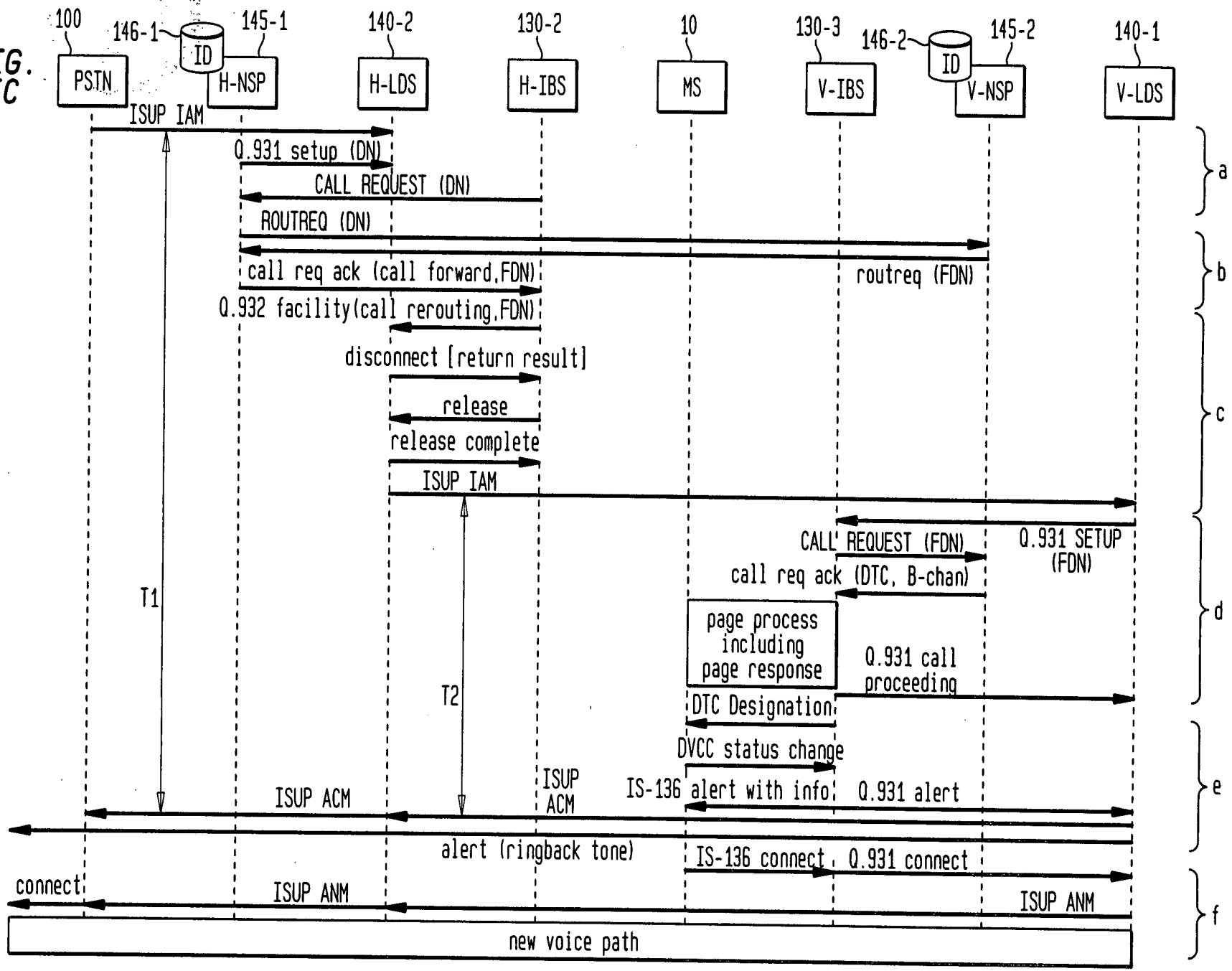

100
146-1
ID
145-1
140-2
130-2
10
PSTN
H-NSP
H-LDS
H-IBS
MS
incoming call
ISUP IAM
Q.931 setup
CALL REQUEST (DN)
call req ack (DTC, B-chan)
T1
page process including page response
Q.931 call proceeding
DTC Designation
DVCC status change
ISUP ACM
Q.931 alerting
IS-136 alert with info
alerting (ringback)
connect
ISUP ANM
Q.931 connect
IS-136 connect
voice path
a
b
c
d
e

FIG. 5C


100
PSTN
146-1
ID
145-1
H-NSP
140-2
H-LDS
130-2
H-IBS
10
MS
130-3
V-IBS
146-2
ID
145-2
V-NSP
140-1
V-LDS
ISUP IAM
Q.931 setup (DN)
CALL REQUEST (DN)
ROUTREQ (DN)
call req ack (call forward,FDN)
routreq (FDN)
Q.932 facility(call rerouting,FDN)
disconnect [return result]
release
release complete
ISUP IAM
CALL REQUEST (FDN)
Q.931 SETUP (FDN)
call req ack (DTC, B-chan)
page process including page response
Q.931 call proceeding
DTC Designation
DVCC status change
IS-136 alert with info
Q.931 alert
ISUP ACM
ISUP ACM
alert (ringback tone)
IS-136 connect
Q.931 connect
connect
ISUP ANM
ISUP ANM
new voice path
T1
T2
a
b
c
d
e
f

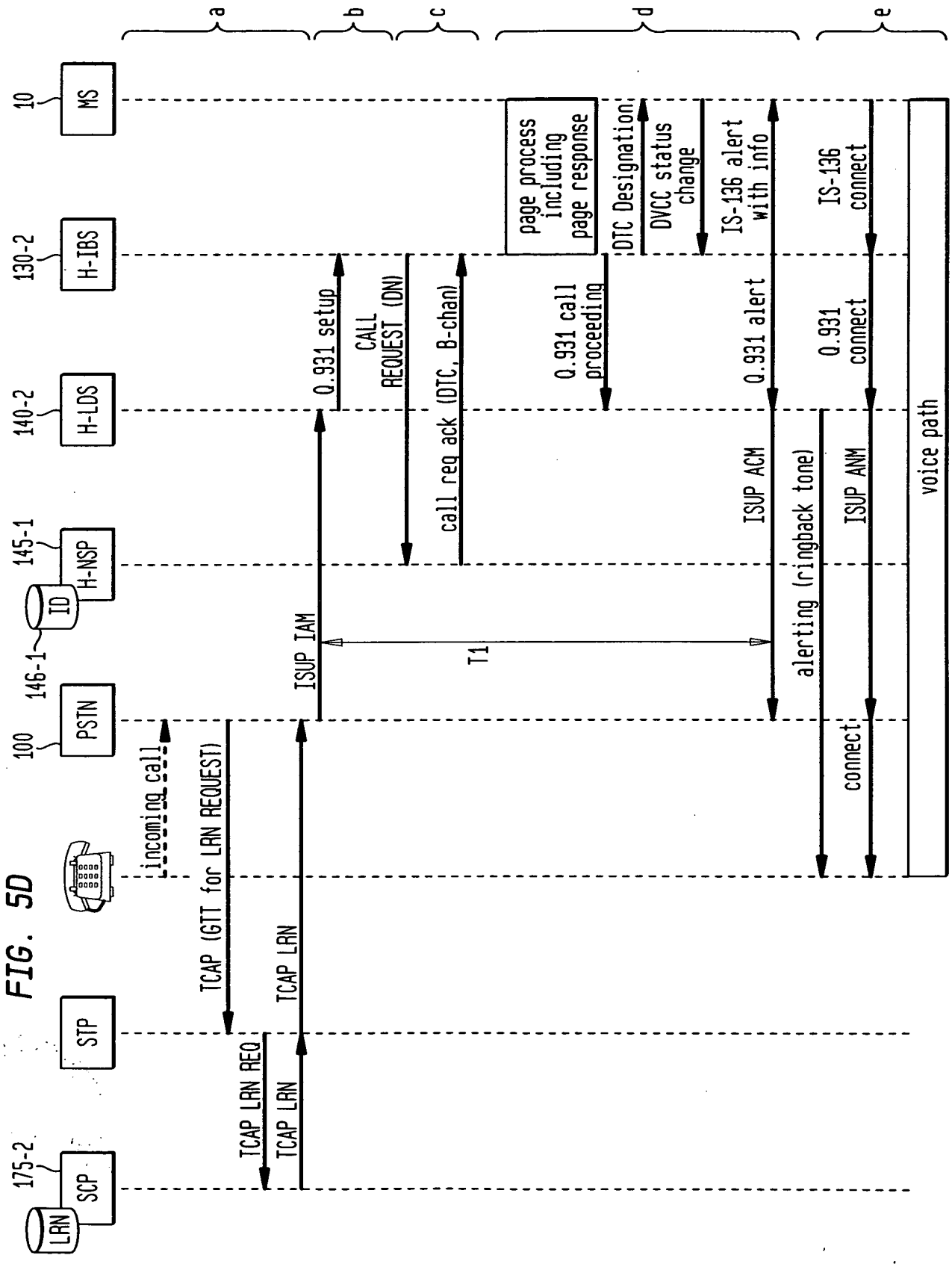

a
b
c
d
e
10
MS
130-2
H-IBS
140-2
H-LDS
145-1
H-NSP
ID
146-1
100
PSTN
STP
175-2
SCP
LRN
incoming call
TCAP (GTT for LRN REQUEST)
TCAP LRN REQ
TCAP LRN
TCAP LRN
ISUP IAM
Q.931 setup
CALL REQUEST (DN)
call req ack (DTC, B-chan)
T1
page process including page response
Q.931 call proceeding
DTC Designation
DVCC status change
IS-136 alert with info
Q.931 alert
ISUP ACM
alerting (ringback tone)
IS-136 connect
Q.931 connect
ISUP ANM
connect
voice path

FIG. 5D

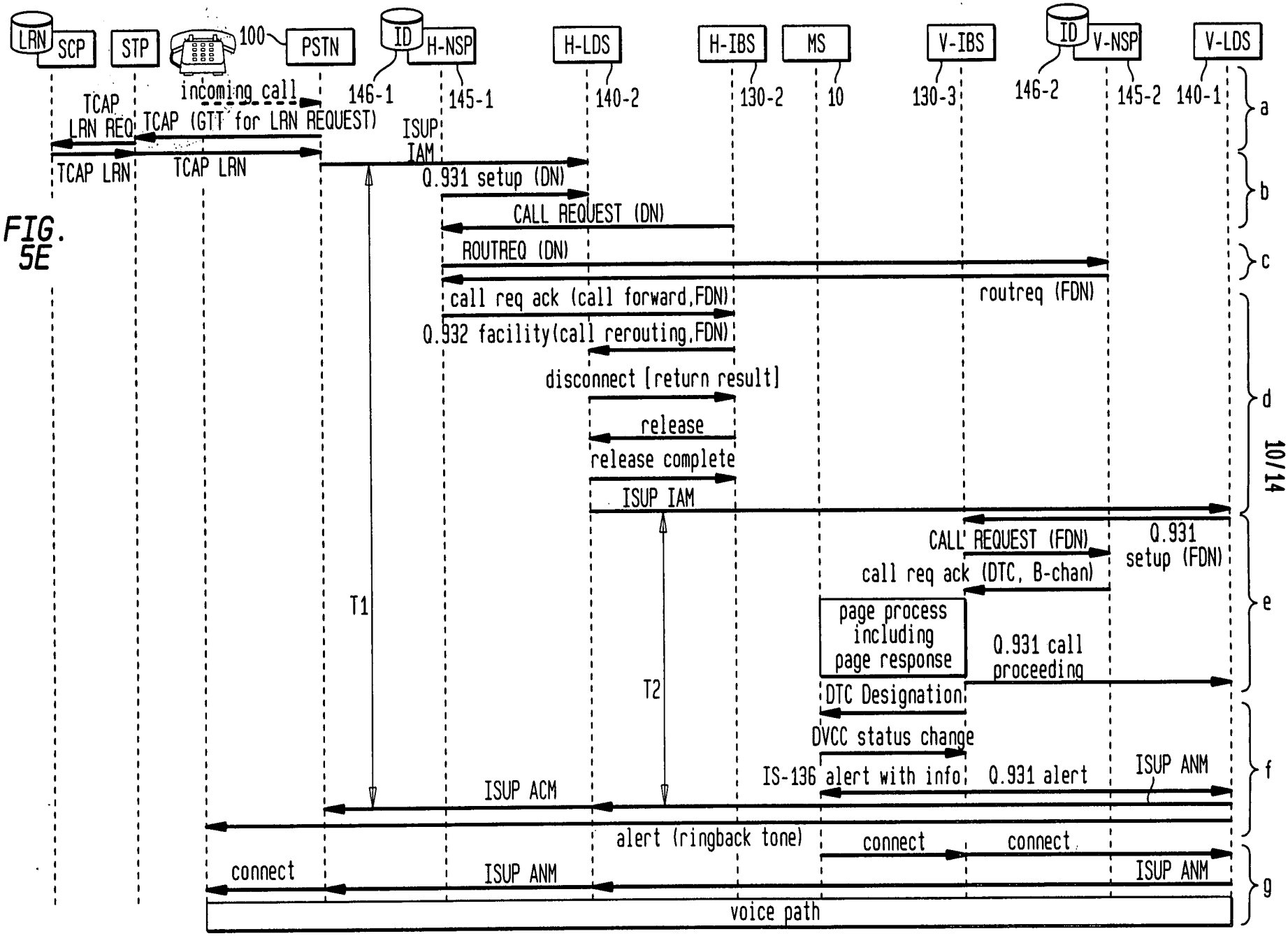

LRN
SCP
STP
100
PSTN
ID
H-NSP
H-LDS
H-IBS
MS
V-IBS
ID
V-NSP
V-LDS
incoming call
146-1
145-1
140-2
130-2
10
130-3
146-2
145-2
140-1
TCAP LRN REQ
TCAP (GTT for LRN REQUEST)
TCAP LRN
TCAP LRN
ISUP IAM
Q.931 setup (DN)
CALL REQUEST (DN)
ROUTREQ (DN)
routreq (FDN)
call req ack (call forward,FDN)
Q.932 facility(call rerouting,FDN)
disconnect [return result]
release
release complete
ISUP IAM
CALL REQUEST (FDN)
Q.931 setup (FDN)
call req ack (DTC, B-chan)
page process including page response
Q.931 call proceeding
DTC Designation
DVCC status change
IS-136 alert with info
Q.931 alert
ISUP ANM
ISUP ACM
alert (ringback tone)
connect
connect
connect
ISUP ANM
ISUP ANM
voice path
T1
T2
a
b
c
d
e
f
g

FIG. 5E

FIG. 5F

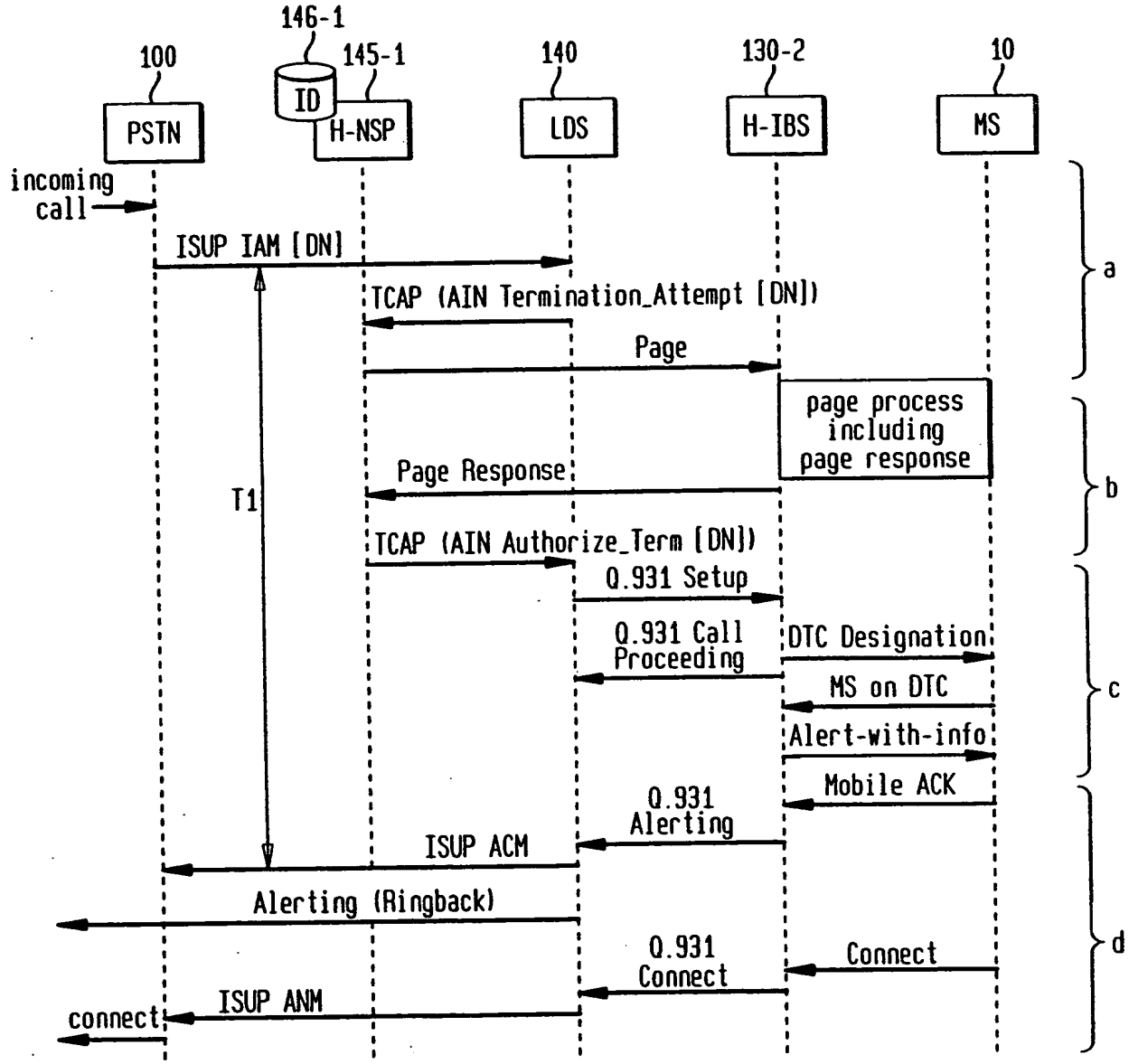

146-1
100
145-1
140
130-2
10
ID
PSTN
H-NSP
LDS
H-IBS
MS
incoming call
ISUP IAM [DN]
TCAP (AIN Termination_Attempt [DN])
Page
page process including page response
Page Response
T1
TCAP (AIN Authorize_Term [DN])
Q.931 Setup
Q.931 Call Proceeding
DTC Designation
MS on DTC
Alert-with-info
Mobile ACK
Q.931 Alerting
ISUP ACM
Alerting (Ringback)
Q.931 Connect
Connect
ISUP ANM
connect
a
b
c
d

FIG. 6A

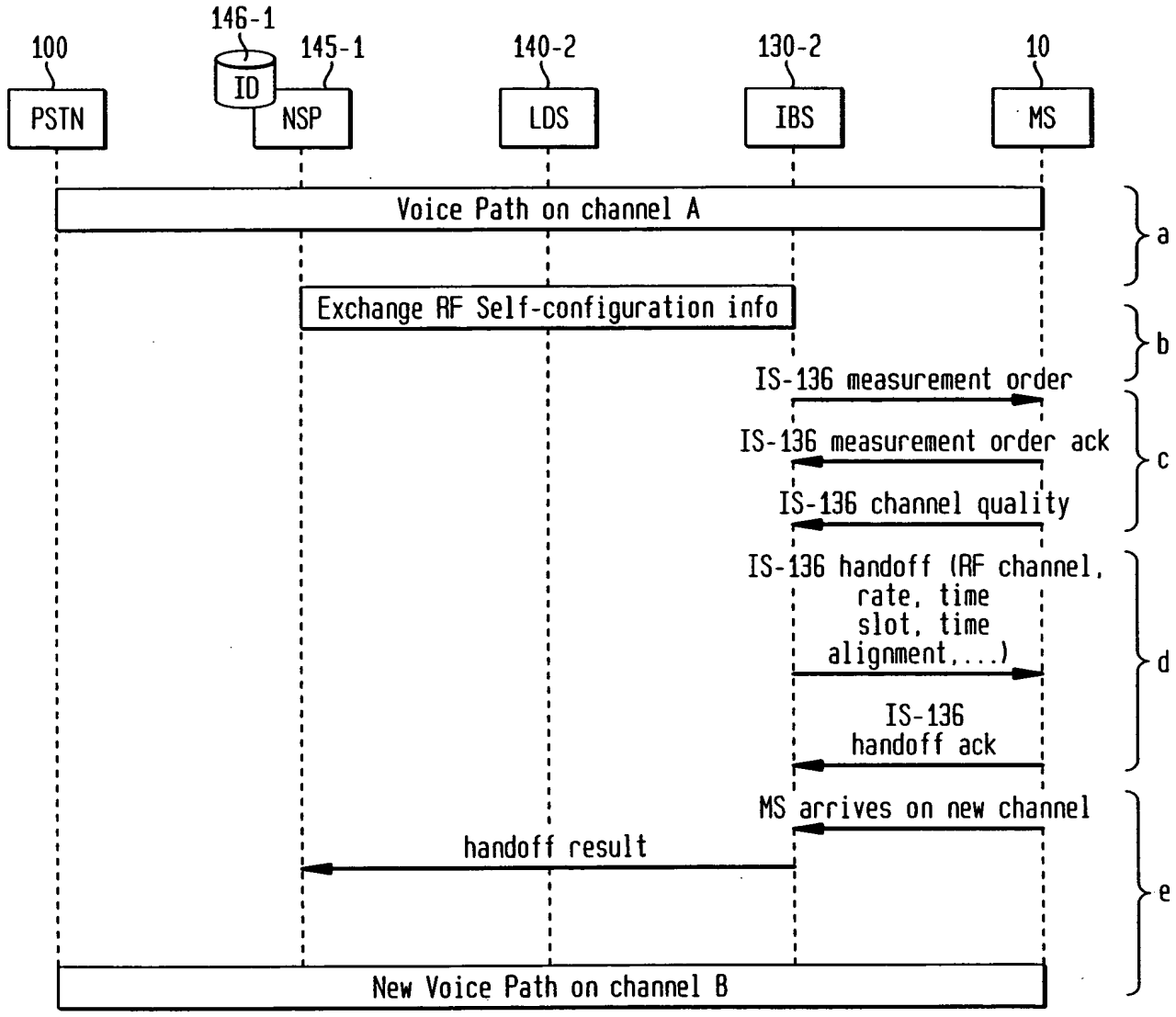

100
PSTN
146-1
ID
145-1
NSP
140-2
LDS
130-2
IBS
10
MS
Voice Path on channel A
a
Exchange RF Self-configuration info
b
IS-136 measurement order
IS-136 measurement order ack
IS-136 channel quality
c
IS-136 handoff (RF channel, rate, time slot, time alignment,...)
IS-136 handoff ack
d
MS arrives on new channel
handoff result
e
New Voice Path on channel B

FIG. 6B

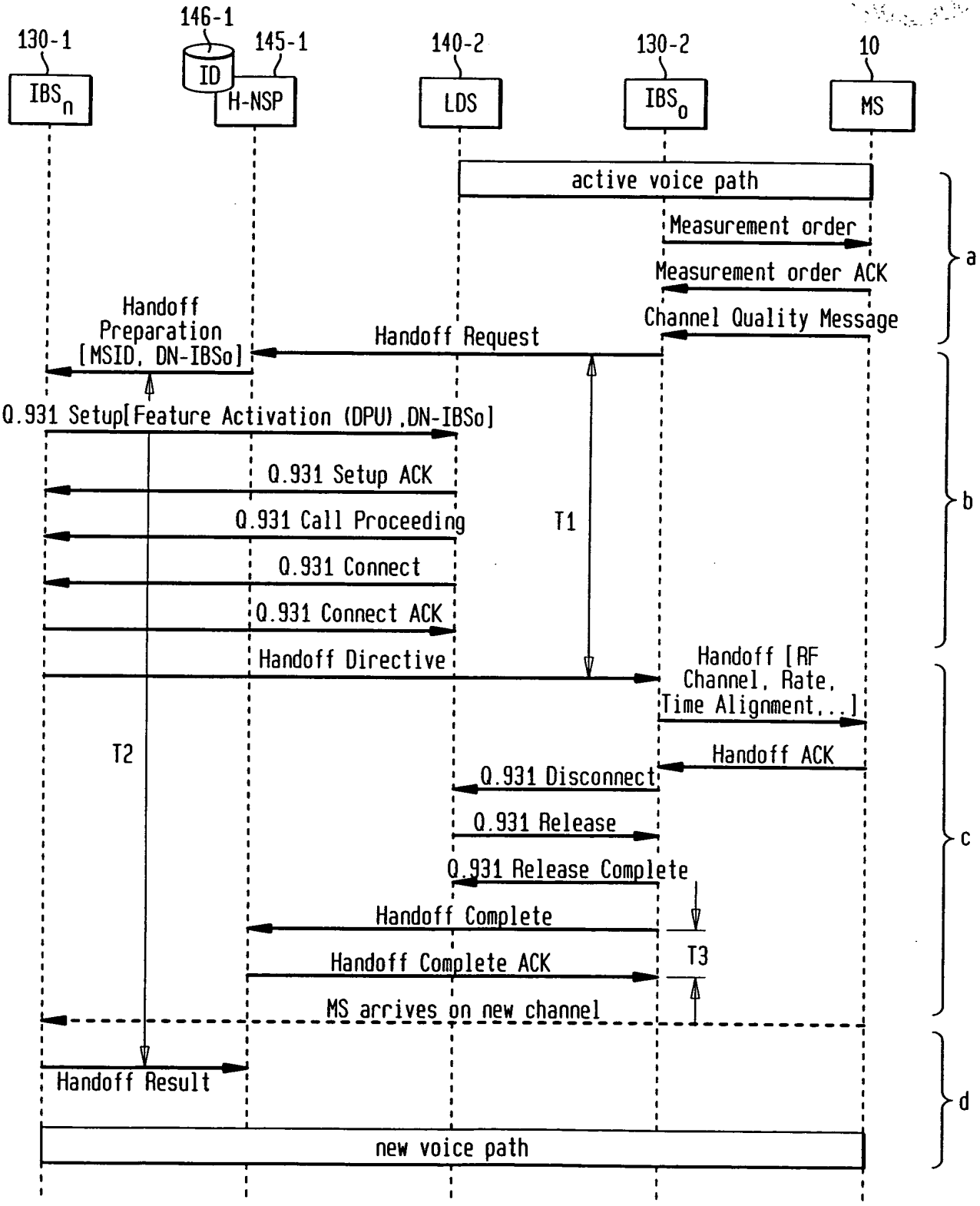
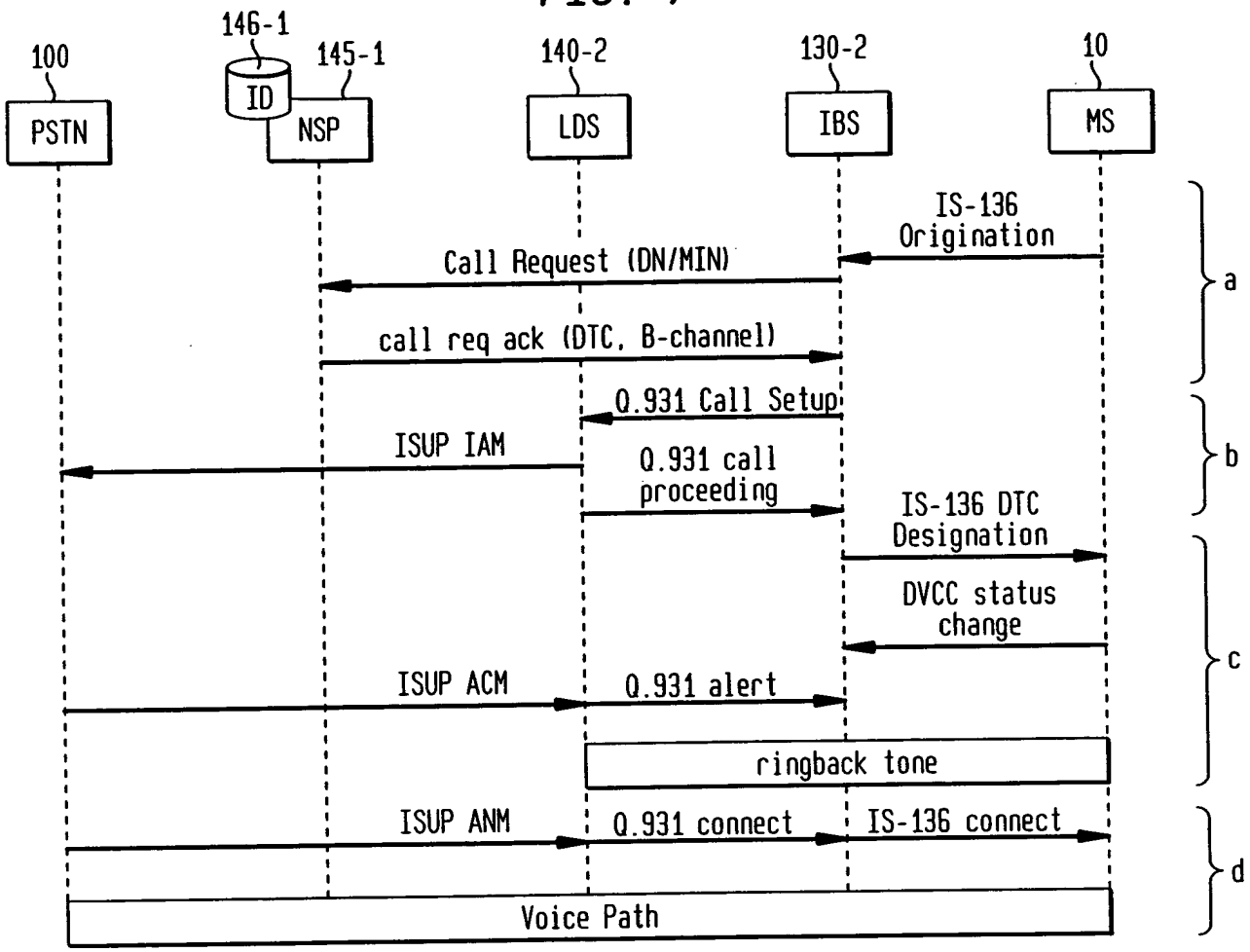

130-1
IBS_n
146-1
ID
145-1
H-NSP
140-2
LDS
130-2
IBS_o
10
MS
active voice path
Measurement order
Measurement order ACK
Channel Quality Message
a
Handoff Preparation [MSID, DN-IBSo]
Handoff Request
Q.931 Setup[Feature Activation (DPU),DN-IBSo]
Q.931 Setup ACK
Q.931 Call Proceeding
Q.931 Connect
Q.931 Connect ACK
T1
b
Handoff Directive
Handoff [RF Channel, Rate, Time Alignment...]
T2
Handoff ACK
Q.931 Disconnect
Q.931 Release
Q.931 Release Complete
Handoff Complete
T3
Handoff Complete ACK
MS arrives on new channel
c
Handoff Result
new voice path
d

FIG. 7


100
PSTN
146-1
ID
145-1
NSP
140-2
LDS
130-2
IBS
10
MS
IS-136 Origination
Call Request (DN/MIN)
call req ack (DTC, B-channel)
Q.931 Call Setup
ISUP IAM
Q.931 call proceeding
IS-136 DTC Designation
DVCC status change
ISUP ACM
Q.931 alert
ringback tone
ISUP ANM
Q.931 connect
IS-136 connect
Voice Path
a
b
c
d